ALBUCA TENUIFOLIA AND *A. SHAWII* (ORNITHOGALOIDEAE), TWO DISTINCT SPECIES FROM SOUTH AFRICA

INTRODUCTION

Albuca tenuifolia Baker was described and illustrated in 1872 from South African material sent by Peter MacOwan to William Wilson Saunders in England, neither citing a precise locality nor a herbarium collection studied by Baker. This species has been mostly overlooked and has only been cited in the recentmost checklist of the South African flora (Manning & Goldblatt 2003), although with many uncertainties.

Recently, two very different taxonomic studies have been published on *Albuca tenuifolia* Baker. On the one hand Martínez-Azorín *et al.* (2011) presented data supporting *A. tenuifolia* as a distinct species belonging to *A.* subg. *Mitrotepalum*, after rediscovery of wild popu-

lations fitting the concept described and illustrated by Baker (1872). On the contrary, Müller-Doblies (2012), almost at the same time, radically reinterpreted the circumscription of *A. tenuifolia*, treating the later *A. shawii* as a synonym.

RECOVERY OF TWO DISTINCT SPECIES

The taxonomic proposal presented by Müller-Doblies (2012) was based on a herbarium specimen collected by Peter MacOwan (*MacOwan 1851*, GRA) (acronyms of herbaria according to Thiers (2012)) and labelled as '*Albuca tenuifolia* Bak'. The existence of that herbarium collection "allowed the taxonomic understanding of Baker's description", although Müller-Doblies accepted that "the voucher—*MacOwan 1851*, GRA—has no similarity at all with the plate 335 in Saunders' Refugium". Her explanation was that "the artist felt unsure of the 'wilting' drooping flowers in this *Albuca*, as earlier *Albuca* plates in the Refugium Botanicum had mostly erect flowers. Thus, the artist 'corrected' the drooping flowers to erect ones and 'corrected' also somewhat the size of flowers and pedicels. By 'correcting' the drooping flowers to erect ones in a glandular species the artist 'created' a new character combination not found in nature, 'a unique new species'." She also assumes that the description was written by Baker directly from the illustration. Furthermore, she proposed that the fact that *MacOwan 1851* GRA has an identification label with Baker's handwriting, supposedly attached by Peter MacOwan, supported its acceptance as material studied by Baker, and hence she selected it as a 'lectotype'. This conclusion is not correct, however, since MacOwan's specimen is not original material (McNeill *et al.* 2006: Art. 9.2 Note 2), and therefore should be regarded as a neotype (McNeill *et al.*, 2006: Art. 9.6 and 9.8). Müller-Doblies (2012) speculated that a duplicate of *MacOwan 1851* existed at Kew and was studied by Baker. This could explain why Baker (1897) cited the same collection as *A. minor*. Even so, this fact does not change the original concept of *A. tenuifolia* as described and illustrated in the protologue.

The taxonomic proposal made by Müller-Doblies (2012) represents a radical change in the original concept of *A. tenuifolia*, and it also modifies the taxonomy of a widely accepted and common species in South Africa, *Albuca shawii*. This compromises the correct application of both names and here we clarify their taxonomy.

As argued by Martínez-Azorín *et al.* (2011), plants fitting the original concept of *A. tenuifolia* were found in several high altitude locations in the Sneeuberg, Great Winterberg–Amatola, and Stormberg mountains, with an outlying population in the Steenkampsberg in Mpumalanga. These plants are characterized by hypogeal and proliferous, irregularly compressed bulbs; numerous, filiform, minutely papillate (only visible under microscope)—but not viscose glandulose—leaves; glabrous peduncle and pedicels; erect, yellow-green flowers with all six stamens bearing fertile anthers; a subglobose ovary with divergent paraseptal crest; and a long, narrowly obpyramidal trigonous style, fitting almost perfectly the protologue of Baker (1872). The erect flowers, with six fertile stamens are characteristic of *A.* subg. *Mitrotepalum* U.Müll.-Doblies (= *A.* sect. *Branciona* (Salisb.) J.C.Manning & Goldblatt). There is, however, an apparent incongruence regarding leaf indumentum in Baker's protologue. The leaves were described as 'glanduloso-papillose under a lens'. This can be interpreted as an error by Baker (1872), who likely interpreted the papillae as glands. In any case, the structures are neither viscose nor stalked and evident to the naked eye, as they are in *A. shawii* (see Figure 1 for comparison). This fact is supported by the accurate illustration in the protologue of *A. tenuifolia*, which shows leaves, peduncle, and pedicels glabrous at first sight, with a close-up of a leaf section, numbered 1 in plate 335 of Baker (1872), bearing minute papillae. Although the indumentum in the illustration seems to be in part shortly stalked under magnification this can be explained by drawing inaccuracies. In any case, the glands in *A. shawii* are always relatively much longer with regard to leaf width. This colour illustration was prepared by Walter H. Fitch, a renowned artist who indeed reflected the character combination found on living wild plants of this extant good species. This plate was chosen as the obligate lectotype

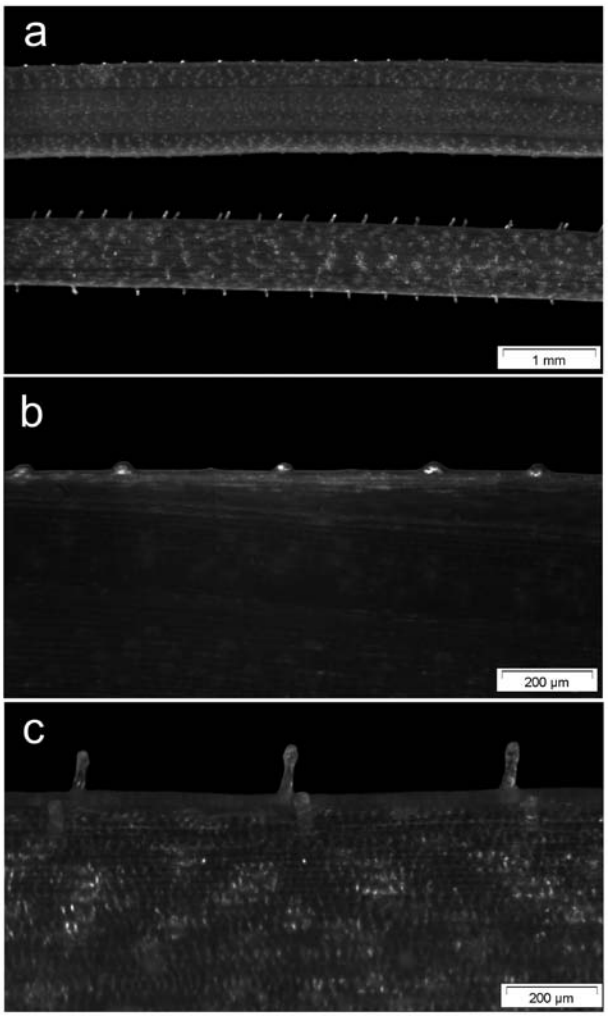

FIGURE 1.—Comparison of fresh leaf indumentum in *A. tenuifolia* Baker (Eastern Cape, Somerset East, summit of Boschberg, *Clark & Martínez-Azorín* 23 GRA) and *Albuca shawii* Baker (Eastern Cape, Linedrift, near Keiskamma river bridge on N2, *Martínez-Azorín, Dold & Martínez-Soler* 520 GRA): A, Leaf general view of *A. tenuifolia* (above) and *A. shawii* (below); B, Sessile papillae of *A. tenuifolia*; C, Long stipitate glands of *A. shawii*.

of the species by Martínez-Azorín *et al.* (2011), who also designated an epitype among specimens collected on the summit of Boschberg (Somerset East).

The existence of the collection *MacOwan 2071* (K000524291), that he identified as '*A. polyphylla* Baker', proves that MacOwan gathered plants from the epitype locality. The sheet includes three complete plants that were collected 'In proecipit. summi Mtis Boschberg', flowering in December at 4 500 feet altitude, which fit perfectly the morphological traits, habitat and locality of the epitype specimen of *Albuca tenuifolia*. This collection was also cited as *A. polyphylla* by Baker (1897: 459), probably because both taxa look very similar when dried. However, the name *A. polyphylla* is currently applied to a smaller, white flowered species, characterized by the numerous filiform leaves spreading falcately from the top of the bulb, and it occurs in drier habitats at lower elevations.

It is also important to note that Baker (1873) in his comprehensive revision of Ornithogaleae and Chlorogaleae added to description of his *A. tenuifolia* the following sentence: 'Cap B. Spei, hort. Saunders, legit MacOwan, v. v.' Contrary to Müller-Doblies (2012) assumption, this demonstrates that Baker did see living plants of *A. tenuifolia* grown in Saunders's glasshouse, of which no herbarium sheets were kept at K (see Baker 1897: 461).

Regarding *Albuca shawii*, it was described by Baker (1874) and is a species of *A.* subg. *Falconera* (Salisb.) Baker (=*A.* sect. *Falconera* (Salisb.) J.C.Manning & Goldblatt) with nodding flowers, outer stamens usually with sterile anthers, and leaves, peduncle and pedicels with abundant and clearly visible, stipitate glands. Its original description cited the following studied specimens: '*Caput Bona Spei ad ripas fluminis "Vaal river" et in ditione Colesberg*, Dr. Shaw!. *Kaffraria in graminosis ad Kabousie alt. 3500 pedes*, Murray, 54!. (Sent by Mr. MacOwan to Herb. Kew.)'. It is remarkable to note that Baker (1874) described this species as having '*folia … glabra'* and '*stylus filiformis … stigmate capitato obscure trilobato*', the latter character being the basis to create his new monotypic section, *Albuca* sect. *Leptostyla*. However, the original material present at K—Colesberg, *Shaw* s.n. (K000257312); Vaal rivier, *Shaw s.n.* (K000257313); *in graminosis ad* Kabousie, *Murray* 54 (K000257314)—include plants that match the traditional concept of *A. shawii*, and they indeed bear long stipitate glands in most of their parts that are visible to the naked eye. Moreover, *Murray* 54 (K000257314) has a typically obpyramidal style, whereas other gynoecia are thinner (resembling a narrow style), probably due to desiccation. This is congruent with comments by Hilliard & Burtt (1982: 282) on this same subject. Gynoecium differences with regard to *A. tenuifolia* are evident when living plants are compared (Figure 2). All populations of *A. shawii* we observed in the wild showed constantly obpyramidal styles. Furthermore, two of the synonyms of *A. shawii* that are currently accepted (e.g. *A. trichophylla* Baker and *A. minima* Baker) were described as having pubescent, not glandulose leaves, whilst their types show plants with long stipitate glands. These incongruences in the protologues are similar to that concerning *A. tenuifolia*, as cited before.

According to the data presented above both taxa should be regarded as distinct at the species rank, as shown below.

TAXONOMY

Albuca tenuifolia *Baker*, Refugium Botanicum [Saunders]: t. 335 (1872). Lectotype, designated by

FIGURE 2.—Flower dissections of *A. tenuifolia* Baker (A, Eastern Cape, Somerset East, summit of Boschberg, *Clark & Martínez-Azorín* 23 GRA) and *Albuca shawii* Baker (B, Eastern Cape, Linedrift, near Keiskamma River Bridge on N2, *Martínez-Azorín, Dold & Martínez-Soler* 520 GRA). Outer tepals and stamens above; inner tepals and stamens below; lateral views of gynoecia. Scale bar: 1 cm.

Martínez-Azorín *et al.*: 467 (2011): Baker: t. 335 (1872). Epitype, designated by Martínez-Azorín *et al.*: 467 (2011): South Africa, Eastern Cape, Somerset East, summit of Boschberg, northeast of Bloukop, in shallow soil on rocky places, 1 574 m, 10 May 2010, *V.R. Clark & M. Martínez-Azorín* (GRA, epi.; ABH, K, PRE, isoepi.)

Diagnostic characters: *Albuca tenuifolia* can be easily identified by its hypogeal and proliferous, irregularly compressed bulbs; filiform and straight leaves that bear minute and sessile papillae (only visible under microscope); glabrous peduncle and pedicels; erect pale yellow-green flowers; strongly hooded inner tepal tips; all stamens bearing fertile anthers; subglobose ovary with divergent paraseptal crest; and a narrowly obpyramidal trigonous style.

The characteristic form of the inner tepal tips, strongly hooded and resembling a mitre (Figure 2a) together with the erect flowers, place *A. tenuifolia* in *A.* subg. *Mitrotepalum* (= *A.* sect. *Branciona*). For further details and discussion on subgeneric arrangement of *Albuca* see Müller-Doblies (1987, 1995).

Albuca shawii *Baker* in Journal of Botany (London) 12: 367 (1874). Lectotype, designated by Hilliard & Burtt: 281 (1982): South Africa, Northern Cape, Colesberg, *Shaw s.n.* (K000257312, lecto.—photo!).

Diagnostic characters: *Albuca shawii* is characterized by its hypogeal, ovoid, and mostly solitary bulbs; filiform leaves with usually coiled apexes; leaves, penduncle, and pedicles with evident, stipitate glands; nodding yellow-green flowers; inner tepals with a slight apical hood and a triangular structure facing downwards; only the three inner stamens bearing fertile anthers, the outers commonly lacking anthers; oblong ovary with almost straight paraseptal crests; and the shorter and widely obpyramidal trigonous style.

The inner tepals tips of *A. shawii* are neither strongly hooded nor hinged (Figure 2b), a character which, together with the nodding flowers, place this species in *A.* subg. *Falconera* (= *A.* sect. *Falconera*) (cf. Müller-Doblies 1987, 1995) The species is the type of *A.* sect. *Trianthera* U.Müll.-Doblies (= *A.* ser. *Trianthera* (U.Müll.-Doblies) J.C.Manning & Goldblatt), characterized by the presence of only three fertile anthers.

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